

AMENDMENTS TO THE CLAIMS

1. (currently amended) A mobile communication system performing both radio communication to a mobile station and packet communication within the system, said mobile communication system comprising:

a top node located at a boundary between a mobile communication network and a fixed network of an IP network system and performing IP packet routing;

a plurality of terminal nodes respectively to register and manage one or more subordinate ~~accommodate~~ mobile stations ~~thereunder~~;

a plurality of intermediate nodes layered in a tree-shape connection structure and provided between the top node and the terminal nodes, the tree-shape connection structure having a network structure in which each intermediate node of the plurality of intermediate nodes performs IP packet routing and there ~~[[is]]~~ are no redundant routes for IP packet flow ~~[[to]]~~ between the top node and each terminal node of the plurality of terminal nodes,

wherein ~~[[each]]~~ a terminal node of the plurality of terminal nodes retains respective management information of a mobile station which is ~~accommodated in~~ registered with ~~[[a]] the terminal node of interest, the management information includes~~ an IP address assigned to the mobile station, and

wherein each intermediate node of the plurality of intermediate nodes transfers user data received from any node located from within the mobile communication network, including a top node, an intermediate node, or a terminal node, or received from a different network and addressed to the mobile communication network, by use of a broadcast format to the plurality of terminal nodes, ~~in which the user data is further transmitted to~~ [[a]] the mobile station by the terminal node in which the mobile station is registered subordinate to and managed by the terminal node of interest, based on the management information retained by the terminal node of interest.

2. (cancelled)

3. (previously presented) The mobile communication system according to claim 1, wherein a parameter requesting to use a common traffic channel is contained in a connection request signal transmitted from the mobile station to the terminal node, and by use of the parameter, the terminal node secures a transmission path for transferring the user data on the common traffic channel provided between the mobile station and the terminal node.

4. (currently amended) The mobile communication system according to claim 3, wherein [[an]] the IP address assigned to the mobile station is further contained in the connection request signal, and the terminal node generates a management table having the IP address correspondingly to a number for identifying the mobile station, and the mobile station is managed on an IP address basis according to the management table.

5. (previously presented) The mobile communication system according to claim 1, wherein the terminal node comprises at least a function of managing the terminal location, a function of managing a communication path, and environment setting information necessary for establishing packet communication between the mobile station and the terminal node, and a message transmitted from the mobile station for generating the environment setting information is terminated in the terminal node.

6. (previously presented) The mobile communication system according to claim 1, wherein the terminal node is either a radio base station or a radio network controller.

7. (currently amended) A packet transmission method in the mobile communication system according to claim 1, the method comprising:

a first processing procedure registering the location of the mobile station into the terminal node by setting up a signal transmission path between the terminal node and the mobile station;

a second processing procedure setting a mobile communication environment;
and

a third processing procedure setting up a user data transmission path.

8. (currently amended) A mobile communication system ~~transmitting information either addressed to or originated from~~ comprising:

a mobile station; ~~on a packet communication basis between~~

a plurality of hierarchically disposed nodes, wherein the hierarchically disposed nodes are layered in a tree-shape connection structure having a top node, intermediate nodes and a plurality of terminal nodes disposed on a subordinate side of the tree-shape connection structure and a network structure in which each node of the plurality of hierarchically disposed nodes performs IP packet routing and there [(is)] are no redundant routes for IP packets [(to)] between the top node and each terminal node, wherein

a node disposed on [(the)] superordinate ~~to the plurality of terminal nodes~~ [(side)] in the hierarchy comprises a means for transmitting a packet in a broadcast format to [(a)] ~~the plurality of terminal nodes disposed on a subordinate side,~~ and

each terminal node of the plurality of terminal nodes disposed on the subordinate side in the hierarchy comprises a means for transmitting a user packet to a predetermined node superordinate to a terminal node of interest, according to information received from [(the)] ~~a mobile station accommodated in~~ registered with the terminal node of interest,

wherein [(each)] a terminal node of the plurality of terminal nodes retains respective management information of [(a)] the mobile station which is accommodated in registered with the terminal node of interest, the management information includes an IP address assigned to the mobile station, and

wherein, each intermediate node of the plurality of intermediate nodes transfers user data received from any node located from within ~~[[in]]~~ the network structure, including ~~[[a]]~~ the top node, an intermediate node, or a terminal node, or received from a different network and addressed to the network structure, by use of a broadcast format to the plurality of terminal nodes, ~~in which~~ the user data is further transmitted by the terminal node of interest to [[a]] the mobile station registered therewith ~~subordinate to and managed by the terminal node of interest~~, based on the management information retained by the terminal node of interest.

9. (currently amended) A node included in a mobile communication system transmitting information either addressed to or originated from a mobile station on a packet communication basis between hierarchically disposed nodes,

wherein the hierarchically disposed nodes are layered in a tree-shape connection structure having a top node, intermediate nodes and a plurality of terminal nodes disposed on a subordinate side of the tree-shape connection structure and a network structure in which each node of the plurality of hierarchically disposed nodes performs IP packet routing and there ~~[[is]]~~ are no redundant routes for IP packets ~~[[to]]~~ between the top node and each terminal node, and

each node comprises:

a transmission unit to transmit a user packet in a broadcast format to ~~[[a]]~~ the plurality of terminal nodes disposed on the subordinate side in the hierarchy; and

a reception unit to receive a user packet transmitted from a predetermined subordinate node,

wherein ~~[[each]]~~ a terminal node of the plurality of terminal nodes retains respective management information of a mobile station ~~of interest~~ which is ~~accommodated in~~ registered with the ~~[[a]] terminal node of interest, the management information includes an IP address assigned to the mobile station, and~~

wherein, ~~[[each]]~~ the terminal node of the plurality of terminal nodes transmits the broadcasted user packet to the mobile station ~~of interest~~, based on the management information retained by the terminal node ~~of interest~~.

10. (previously presented) The node according to claim 9, wherein

the transmission unit broadcasts a user packet not addressed to a different system, and

when a received packet is addressed to the different system, the transmission unit transmits said user packet either to the different system, or to a corresponding further superordinate node in the hierarchy.

11. (cancelled)